#8 GM
Ext (2)
Appeal Brief (3 copies)
6.9.04
RECEIVED
CENTRAL FAX CENTER
MAY 2 5 2004
OFFICIAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Kleider et al.
For:	Method of Multiple Carrier Communication within a Non-Contiguous Wideband Spectrum and Apparatus Therefor
Serial No.:	09/690,993
Filed:	October 17, 2000
Examiner:	Liu, S.
Art Unit:	2634

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This brief is in furtherance of the Notice of Appeal, mailed on February 3, 2004.

The fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is being transmitted by facsimile, and therefore the requirement that it be transmitted in triplicate is believed to be waived.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 1.192(c)):

06/10/2004 LHARKS 00000010 502117 09690993
01 FC:1252 420.00 DA
02 FC:1402 330.00 DA

I REAL PARTY IN INTEREST

II RELATED APPEALS AND INTERFERENCES

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Motorola, Inc., a Delaware corporation.

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 30

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: none
2. Claims withdrawn from consideration but not canceled: none
3. Claims pending: 1-30
4. Claims allowed: 5, 6, 9-11 and 30
5. Claims objected to: 14-21 and 25-29

6. Clams rejected: 1-4, 7, 8, 12, 13 and 22-24

C. CLAIMS ON APPEAL

The claims on appeal are: 1-4, 7, 8 and 12-29

IV. STATUS OF ANY AMENDMENTS AFTER FINAL

No amendments have been filed after final.

V. SUMMARY OF INVENTION

The invention pertains to a method of multiple carrier communication within a non-contiguous wideband spectrum and apparatus therefor, using orthogonal frequency division multiplex communication. The invention involves determining (74, 110) a signal to noise ratio for each of a plurality of subchannels (30) (page 6, lines 6-8). The signal to noise ratio for each of the plurality of subchannels is used to determine the nature of the signal to be used for communicating OFDM data in each of the sub-channels (page 6, lines 8-15).

In at least some instances, the information used to determine the nature of the communications is compiled and conveyed as part of a modulation profile corresponding to the wideband channel, which encompasses the plurality of sub-channels (page 6, lines 6-8; page 19, lines 17-18). From the signal to noise ratio, each of the subchannels can be designated as clear, impeded or obstructed. In some instances there will be multiple different levels of impeded designations (page 19, lines 18-27). Depending upon the subchannel designation different subchannel signal levels corresponding to different bit-to-symbol mappings can be associated with each subchannel (page 5, lines 19-27; page 19, lines 31-33). The signal to noise level can similarly be used to manage (76, 102) the power distribution between subchannels (page 11, lines 8-13). In some instances, the communication characteristics for each of the subchannels can be defined and/or adjusted to optimize quality of service (112), or optimize throughput (114) (page 13, lines 28-32).

The present invention further allows for the determination of the nature of the signals to be used for communicating OFDM data to be periodically repeated to accommodate

PAGE 5/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

changing communication conditions (page 20, line 34 to page 21, line 2).

VI. ISSUES

1. Whether claims 22-24 have been improperly rejected under 35 U.S.C. 102(b) as being anticipated by Hughes-Hartogs (US Patent No. 4,679,227).

2. Whether claims 1-4, 7, 8, 12 and 13 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Su et al. (IEEE, 1998, entitled "A Distributed Power Allocation Algorithm with Adaptive Modulation for Multi-Cell OFDM Systems") in view of Kumar (US Patent No. 5,748,677).

VII. GROUPING OF CLAIMS

Group 1: Claims 22-29

Group 2: Claims 1-4, 7, 8 and 12-21

VIIIA. ARGUMENTS – REJECTIONS UNDER 35 U.S.C. § 102

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the ... claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Examiner has rejected claims 22-24 under 35 U.S.C. 102(b) as being anticipated by Hughes-Hartogs (US Patent No. 4,679,227). However contrary to the Examiner's assertions, Hughes-Hartogs, '227, fails to make known each and every element as set forth in the associated claims. More specifically Hughes-Hartogs, '227, contrary to the Examiner's assertions, minimally fails to teach or suggest determining a signal to noise ratio for each of the subchannels.

PAGE 6/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

Such an argument was presented as part of a response to a similar rejection, which was raised in the first office action issued in this case. In responding to the previously presented argument, the Examiner identified several portions of the cited reference where support for the Examiner's position was alleged to be found. However upon reviewing the specific portions of the reference noted by the Examiner, the applicants continue to allege Hughes-Hartogs, '227, fails to teach or make known the claimed element previously noted. While the specific portions of the reference that the Examiner identifies makes reference to the concept of a signal to noise ratio, the reference does not teach or suggest that a signal to noise ratio should be obtained for each subchannel. Alternatively, Hughes-Hartogs, '227, teaches obtaining a <u>**noise level**</u> at each carrier frequency, where the noise data present on the line is specifically accumulated in the absence of any transmission by either modem (col. 8, lines 21-23).

The signal to noise ratios which are discussed in the cited reference do not correspond to signal to noise ratios, which are obtained by the receiver for each channel. Alternatively, the described signal to noise ratios correspond to a previously established reference signal to noise ratio value, which must be exceeded in order to support the use of a particular Quadrature Amplitude Modulation (QAM) constellation to transfer the number of bits in the constellation without exceeding a specific bit error rate. The reference signal to noise ratio is used in conjunction with the measured noise level to compute the power level, which is required to transmit data elements of varying complexity (col. 11, lines 18-20). Hughes-Hartogs, '227, teaches that the reference signal to noise ratio values, which are used in the calculations, are available from standard references (col. 11, lines 26-27). Consequently, Hughes-Hartogs, '227, fails to teach or make known obtaining a signal to noise ratio for each subchannel, and thus the same can not be said to be used in associating one of a zero, an intermediate, or a maximum subchannel signal level to each of the plurality of subchannels within said wideband channel.

In view of the above noted deficiency, the applicants would respectfully request that the rejection of claims 22-24 be correspondingly reversed.

PAGE 7/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

VIIIB. ARGUMENTS – REJECTIONS UNDER 35 U.S.C. § 103

The Federal Circuit has repeatedly emphasized that, with respect to obviousness, the standard for patentability is the statutory standard. The inquiry is whether the claimed subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. In this regard, see for example, Monarch Knitting Machinery Corp. v. Saulzer Maurat GMBH, 139 F.3d 877, 881, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998).

For purposes of formulating an obviousness type rejection, the Patent and Trademark Office (PTO) has the initial burden of presenting a prima facie case. In re Mayne, 104 F.3d 1339, 1341, 41 USPQ2d 1451 (Fed. Cir. 1997). In order to establish a prima facie case of obviousness, it must be shown that the prior art reference, or references when combined, teach or suggest all of the claim limitations. Pro-Mold and Tool Co. v. Great Lakes Plastics Inc., 75 F.3d 1568, 37 USPQ2d 1626, 1629 (Fed. Cir. 1996), In re Royka, 490 F.2d 981, 180 USPQ 580, 583 (CCPA 1974). Furthermore, the showing of a suggestion, teaching, or motivation to combine prior teachings "must be clear and particular." In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). Still further, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). These requirements are consistent with the Patent and Trademark Office's own examination guidelines governing the formation of obvious type rejections, see MPEP §2142.

The Examiner has rejected claims 1-4, 7, 8 and 12-21 under 35 U.S.C 103(a) as being unpatentable over Su et al. (IEEE, 1998, entitled "A Distributed Power Allocation Algorithm with Adaptive Modulation for Multi-Cell OFDM Systems") in view of Kumar (US Patent No. 5,748,677).

In rejecting the claims, the Examiner acknowledges that minimally, Su et al., (IEEE) fails to teach receiving a reference signal transmitted over each subchannel in said plurality of subchannels within said wideband channel as provided in claim 1. However, it would not have been obvious to receive a reference signal transmitted over each subchannel in said plurality of subchannels within said wideband channel, as claimed, in view of the combined teachings of the

PAGE 8/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

cited references, because contrary to the assertions of the Examiner, Kumar, '677, teaches that the use of a wideband reference signal in conjunction with a wideband composite subcarrier signal is not desirable. More specifically, the Examiner has focused on language in the background section of the cited reference, which introduces the concept a pilot signal which spans the frequency range including all of the individual narrowband subcarrier signals in the context of an earlier system (col. 6, lines 34-39). However, the Examiner has taken the specifically cited portion out of context, to the extent that the Examiner suggests that the cited portion represents a teaching suggested by the cited reference. If one reads the reference further, it becomes clear that such a system is viewed in the reference as being undesirable, such that when the reference is viewed in its entirety and the particular passage is viewed in its appropriate context, it becomes clear that the reference fails to teach or suggest such a limitation.

While the reference discusses the possibility of a wideband reference signal, the reference speaks further to disadvantages associated with such a system (please see col. 7, lines 19-26 "The reference signal may then cause significant interference to the composite subcarrier signal in the receiver or vice versa"). The reference describes still further, the use of a wideband reference signal as being associated with a degradation in the performance of the receiver in the reception of a composite subcarrier signal (col. 7, lines 30-33). When viewed in a context, which takes into account subsequent discussions by the reference, it becomes clear that the relied upon reference fails to support the Examiner's position. Consequently, contrary to the suggestion by the Examiner, the reference actually teaches away from the claims of the present application, in so far as Kumar, '677, highlights a preexisting view of the detrimental effects associated with the use of a wideband reference signal. As a result one would not have been motivated by the teachings of Kumar, '677, as suggested by the Examiner, in combination with the teachings of Su et al., (IEEE), for purposes of making known the claims of the present application.

The applicants would respectfully request that the rejection of claims 1-4, 7, 8 and 12-21 be correspondingly reversed.

In so far as claims 14-21 and 25-29 have been objected to only to the extent that they were dependent upon a rejected base claim. In view of the allowability for the reasons noted above of the base claims from which they depend, the claims which have been objected to should

PAGE 9/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

similarly be allowable in their presently dependent form.

In view of the above analysis, the applicants would assert, that the Examiner has failed to establish that the cited references either separately or in combination make known or obvious any of the presently pending claims. The applicants would respectfully request that the Examiner's decision to finally reject the presently pending claims be overturned, and that the claims be permitted to proceed to allowance.

Respectfully submitted,

BY: Lawrence J. Chapa
Lawrence J. Chapa
Reg. No. 39,135
Phone No.: (847) 523-0340

Motorola, Inc.
Personal Communication Sector
Intellectual Property Department
600 North US Highway 45, AN475
Libertyville, IL 60048

PAGE 10/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

IX APPENDIX OF CLAIMS

The following is the text of the claims involved in this appeal:

1. A method of orthogonal frequency-division multiplex (OFDM) communication via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

receiving a reference signal transmitted over each subchannel in said plurality of subchannels within said wideband channel;

producing a modulation profile of said wideband channel, wherein said modulation profile is responsive to a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel; and

transmitting OFDM data in response to said modulation profile.

2. An OFDM communication method as claimed in claim 1 wherein said producing activity comprises:

establishing a least-SNR requirement;

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel; and

designating each of said subchannels having an SNR greater than said least-SNR requirement as a clear subchannel.

3. An OFDM communication method as claimed in claim 2 wherein said producing

PAGE 11/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

activity additionally comprises:

establishing a least-quality-of-service requirement; and

optimizing a throughput of each of said clear subchannels in which a quality-of-service is greater than said least-quality-of-service requirement.

4. An OFDM communication method as claimed in claim 2 wherein said producing activity additionally comprises:

establishing a least-throughput requirement; and

optimizing a quality-of-service of each of said clear subchannels in which a throughput is greater than said least-throughput requirement.

5. A method of orthogonal frequency-division multiplex (OFDM) communication via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

producing a modulation profile of said wideband channel, wherein said modulation profile is responsive to a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel including

establishing a least-SNR requirement,

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel,

designating each of said subchannels having an SNR greater than said least-SNR requirement as a clear subchannel,

PAGE 12/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

sorting said subchannels by said SNRs therein,

adjusting said least-SNR requirement,

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel, and

designating each of said subchannels having an SNR greater than said adjusted least-SNR requirement as an impeded subchannel; and

transmitting OFDM data in response to said modulation profile.

6. An OFDM communication method as claimed in claim 5 wherein said producing activity additionally comprises:

determining a noise level for each of said clear and impeded subchannels; and

determining an OFDM data-signal level for each of said clear and impeded subchannels, wherein a subchannel energy level is substantially equal to said OFDM data-signal level for each of said clear subchannels, and said subchannel energy level is substantially equal to a sum of said OFDM data-signal level plus said noise level for each of said impeded subchannels.

7. An OFDM communication method as claimed in claim 1 additionally comprising iterating said producing and transmitting activities to track changes in said SNR in each subchannel of said plurality of subchannels within said wideband channel.

8. An OFDM communication method as claimed in claim 1 wherein said producing activity comprises:

PAGE 13/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

scanning said wideband channel; and

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel in response to said scanning activity.

9. A method of orthogonal frequency-division multiplex (OFDM) communication via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

producing a modulation profile of said wideband channel, wherein said modulation profile is responsive to a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel including

scanning said wideband channel, and

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel in response to said scanning activity, comprising ascertaining usable ones of said subchannels in response to said SNR of each of said subchannels, and estimating a bit error rate for each of said usable subchannels; and

transmitting OFDM data in response to said modulation profile.

10. An OFDM communication method as claimed in claim 9 wherein said transmitting activity transmits said OFDM data signal in response to said bit error rate of each of said usable subchannels.

11. A method of orthogonal frequency-division multiplex (OFDM) communication

PAGE 14/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

producing a modulation profile of said wideband channel, wherein said modulation profile is responsive to a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel including

scanning said wideband channel, and

determining said SNR for each of said subchannels in said plurality of subchannels within said wideband channel in response to said scanning activity, comprising ascertaining usable ones of said subchannels in response to said SNR of each of said subchannels, and estimating a throughput for each of said usable subchannels; and

transmitting OFDM data in response to said modulation profile.

12. A method of orthogonal frequency-division multiplex (OFDM) communication via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

producing a modulation profile of said wideband channel, wherein said modulation profile is responsive to a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel; and

transmitting OFDM data in response to said modulation profile; and

wherein said transmitting activity transmits said OFDM data over more than one user channel.

PAGE 15/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

13. An OFDM communication method as claimed in claim 12 wherein each of said user channels comprises at least one of said subchannels.

14. An OFDM communication method as claimed in claim 13 wherein:

said producing activity additionally comprises designating each of said subchannels having said SNR less than said least-SNR threshold and greater than an SNR-evaluation threshold as an impeded subchannel; and

said transmitting activity transmits said OFDM data so that each of said impeded subchannels receives said OFDM data at said intermediate subchannel signal level.

15. An OFDM communication method as claimed in claim 14 wherein:

said producing activity comprises determining a signal-to-noise ratio (SNR) for each of said subchannels in said plurality of subchannels within said wideband channel;

said producing activity additionally comprises designating each of said subchannels having said SNR greater than a least-SNR requirement as clear subchannel; and

said transmitting activity transmits said OFDM data so that each of said clear subchannels receives said OFDM data at said maximum subchannel signal level.

16. An OFDM communication method as claimed in claim 15 wherein, said least-SNR requirement is a first least-SNR requirement, and wherein:

said producing activity additionally comprises adjusting said least-SNR requirement to produce a second least-SNR requirement;

PAGE 16/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

said producing activity additionally comprises designating each of said subchannels having said SNR less than said first least-SNR requirement and greater than said second least-SNR requirement as an impeded subchannel; and

said transmitting activity transmits said OFDM data so that each of said impeded subchannels receives said OFDM data at said intermediate subchannel signal level.

17. An OFDM communication method as claimed in claim 16 wherein:

said producing activity additionally comprises designating each of said subchannels not designated as one of said clear subchannel and said impeded subchannel as an obstructed subchannel; and

said transmitting activity transmits said OFDM data so that each of said obstructed subchannels receives said OFDM data at said zero subchannel signal level.

18. An OFDM communication method as claimed in claim 14 wherein said producing activity comprises:

determining a signal-to-noise ratio (SNR) for each of said subchannels in said plurality of subchannels within said wideband channel;

designating each of said subchannels having said SNR greater than a first least-SNR requirement as a clear subchannel;

designating each of said subchannels having said SNR less than said first least-SNR requirement and greater than a second least-SNR requirement as an impeded subchannel;

determining a noise level in response to said SNR for each of said clear and impeded

PAGE 17/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

subchannels; and

deducing an OFDM data-signal level for each of said clear and impeded subchannels, wherein a subchannel signal level is a sum of said OFDM data-signal level plus said noise level for each of said clear and impeded subchannels, and wherein said subchannel signal levels for each of said clear and impeded subchannels are substantially equal.

19. An OFDM communication method as claimed in claim 18 wherein said producing activity additionally comprises:

establishing a least-quality-of-service requirement for each of said clear and impeded subchannels; and

optimizing a throughput of each of said clear and impeded subchannels in which a quality-of-service is greater than said least-quality-of-service requirement.

20. An OFDM communication method as claimed in claim 18 wherein said producing activity additionally comprises:

establishing a least-throughput requirement for each of said clear and impeded subchannels; and

optimizing a quality-of-service of each of said clear and impeded subchannels in which a throughput is greater than said least-throughput requirement.

21. An OFDM communication method as claimed in claim 14 additionally comprising iterating said producing and transmitting activities.

PAGE 18/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

22. An orthogonal frequency-division multiplex (OFDM) communication system utilizing a plurality of subchannels within a noncontiguous wideband channel, said system comprising:

an OFDM receiver configured to obtain a signal-to-noise ratio (SNR) for each subchannel in said plurality of subchannels within said wideband channel; and

an OFDM transmitter in communication with said OFDM receiver and configured to transmit OFDM data so that said OFDM receiver receives said OFDM data in each subchannel within said plurality of subchannels within said wideband channel at one of zero subchannel signal level, an intermediate subchannel signal level, and a maximum subchannel signal level in response to said SNR therein.

23. An OFDM communication system as claimed in claim 22 wherein said OFDM receiver comprises:

a scanning section configured to scan each of said subchannels in said plurality of subchannels within said wideband channel;

a detection section coupled to said scanning section and configured to obtain said SNR for each of said subchannels; and

an evaluation section coupled to said detection section and configured to designate as a clear subchannel each of said subchannels having a SNR greater than a least-SNR requirement.

24. An OFDM communication system as claimed in claim 23 wherein said OFDM

PAGE 19/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

transmitter is configured to transmit said OFDM data so that said OFDM receiver receives said OFDM data in each of said clear subchannels at said maximum subchannel signal level.

25. An OFDM communication system as claimed in claim 23 wherein:

said least-SNR requirement is a first least-SNR requirement;

said evaluation section is additionally configured to designate as an impeded subchannel each of said subchannels having a SNR less than said first least-SNR threshold and greater than a second least-SNR requirement.

26. An OFDM communication system as claimed in claim 25 wherein said OFDM transmitter is configured to transmit said OFDM data so that said OFDM receiver receives said OFDM data in each of said impeded subchannels at said intermediate subchannel signal level.

27. An OFDM communication system as claimed in claim 26 wherein:

said intermediate subchannel signal level is one of a plurality of intermediate subchannel signal levels; and

said OFDM transmitter is configured to transmit said OFDM data so that said OFDM receiver receives said OFDM data in each of said impeded subchannels at one of said plurality of intermediate subchannel signal level s in response to said SNR thereof.

28. An OFDM communication system as claimed in claim 25 wherein said evaluation section is additionally configured to designate as an obstructed subchannel each of said

PAGE 20/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28

subchannels not designated as one of said clear subchannels and said impeded subchannels.

29. An OFDM communication system as claimed in claim 28 wherein said OFDM transmitter is configured to transmit said OFDM data so that said OFDM receiver receives said OFDM data in each of said obstructed subchannels at said zero subchannel signal level.

30. A method of orthogonal frequency-division multiplex (OFDM) communication via a plurality of subchannels within a noncontiguous wideband channel, said method comprising:

determining a signal-to-noise ratio (SNR) for each of said subchannels in said plurality of subchannels within said wideband channel;

designating as a clear subchannel each of said subchannels in which said SNR is greater than or equal to a first least-SNR requirement;

designating as an impeded subchannel each of said subchannels in which said SNR is less than said first least-SNR threshold and greater than or equal to a second least-SNR requirement;

designating as an obstructed subchannel each of said subchannels not designated as one of said clear subchannels and said impeded subchannels; and

transmitting OFDM data so that each of said clear subchannels receives said OFDM data at a maximum subchannel signal level, each of said impeded subchannels receives said OFDM data at an intermediate subchannel signal level, and each of said obstructed subchannels receives said OFDM data at zero subchannel signal level.

PAGE 21/21 * RCVD AT 5/25/2004 4:51:01 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/4 * DNIS:8729306 * CSID:18475232350 * DURATION (mm-ss):05-28